

WHAT IS CLAIMED IS:

1. A surface emitting semiconductor laser comprising:

5 a laminate of semiconductor layers emitting multimode laser light; and

a block member blocking light of a specific mode among the multimode laser light emitted from the laminate.

10 2. The surface emitting semiconductor laser as claimed in claim 1, wherein:

the laminate comprises a substrate, a lower reflection mirror on the substrate, an upper reflection mirror, an active region, and a current confinement layer, the active region and  
15 the current confinement layer being interposed between the upper and lower reflection mirrors; and

the block member is provided in an emission aperture provided above the upper reflection mirror.

20 3. The surface emitting semiconductor laser as claimed in claim 1, wherein:

a top of the laminate is partially covered with an electrode so that an emission aperture can be defined; and

the block member is provided on the top of the laminate  
25 and is located in the center of the emission aperture.

4. The surface emitting semiconductor laser as

claimed in claim 1, wherein:

the laminate has a mesa;

an emission aperture is formed on the mesa; and

the emission aperture and the block member have shapes  
5 related to an outer shape of the mesa.

5. The surface emitting semiconductor laser as  
claimed in claim 1, wherein:

the laminate comprises a current confinement layer  
10 having a conductive region; and

the block member has a size smaller than a size of the  
conductive region.

6. The surface emitting semiconductor laser as  
15 claimed in claim 1, wherein the block member and the electrode  
are simultaneously formed.

7. The surface emitting semiconductor laser as  
claimed in claim 1, wherein the block member blocks light of  
20 a fundamental mode among the multimode laser light.

8. A surface emitting semiconductor laser  
comprising:

a surface emitting semiconductor laser capable of  
25 emitting multimode laser beam;

a package that houses the surface emitting semiconductor  
laser and has a transmission window via which the multimode

laser light is emitted; and

a block member that is provided in the transmission window and blocks light of a specific mode among the multimode laser light.

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9. The surface emitting semiconductor laser as claimed in claim 8, wherein the block member has a diameter D1 defined as follows:

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$$D1 = L1 \times 2 \tan(\theta_n/2)$$

where L1 is a distance from the surface emitting semiconductor laser device to the block member,  $\theta_n$  is a divergence angle of emitted light of the specific mode from an optical source of the surface emitting semiconductor laser device in a far-field image of the multimode laser light.

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10. The surface emitting semiconductor laser as claimed in claim 8, wherein the block member is equipped with an antireflection film that prevents the multimode laser light from being reflected by the block member.

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11. The surface emitting semiconductor laser as claimed in claim 8, wherein the block member includes an absorption member that absorbs the light of the specific mode.

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12. The surface emitting semiconductor laser as

claimed in claim 8, wherein:

the surface emitting semiconductor laser device has a mesa that emits the multiple laser light; and  
the block member has a circular shape.

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13. The surface emitting semiconductor device as claimed in claim 9, wherein:

the block member blocks of light of a fundamental mode among the multimode laser light; and

10 the divergence angle  $\theta_n$  is a divergence angle of a diameter of the light of the fundamental mode from an optical source of the surface emitting semiconductor laser device.

14. An optical communication system comprising:

15 a surface emitting semiconductor laser; and  
an optical fiber optically connected to the surface emitting semiconductor laser,

the surface emitting semiconductor laser comprising:  
a laminate of semiconductor layers emitting multimode

20 laser light; and

a block member blocking light of a specific mode among the multimode laser light emitted from the laminate.

15. An optical communication system comprising:

25 a surface emitting semiconductor laser emitting multimode laser light; and

an optical fiber optically connected to the surface

emitting semiconductor laser,

the surface emitting semiconductor laser comprising:

a package that houses the surface emitting semiconductor  
laser and has a transmission window via which the multimode  
5 laser light is emitted; and

a block member that is provided in the transmission  
window and blocks light of a specific mode among the multimode  
laser light.